UNIVERSITY of WISCONSIN-MADISON
Computer Sciences Department

CS 202
Introduction to Computation

Professor Andrea Arpaci-Dusseau
Fall 2010

Lecture 22: How can computation... help visualize data?

Comment on Other Projects

5 comments due by 5pm Today

Find projects that do not have 5 comments yet!

Demo Day on Wednesday

Class is held in CS 1370

Everyone is expected to attend

- Students with lastnames starting A-K will demo
- Other students test and will demo Project 2 later...

5 minutes to set up

- Do not run from webpage!
  - Bring laptop (charged!) with game ready
  - Or, log in to CS machines (get account ahead of time!)
    - Game on USB or loaded into
- Student A-F demo 10:00 – 10:20
- Students G-K demo 10:25 – 10:45

Everyone not doing demo: Play and give comments!

Project 1 Help

TA lab hours
  Monday 12:30 – 2:15
  Tuesday 4-6

Professor office hours (none Wednesday)
  Tuesday 1:30 – 3:30

Send email to cs202-tas@cs.wisc.edu

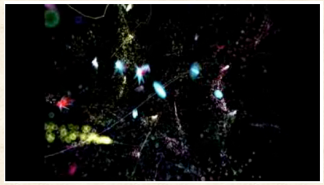
Today's Topic: Data Visualization

TED talk

"Demo: Stunning data visualization in the AlloSphere"

- See, hear and interpret scientific data
- Dive into the brain, feel electron spin, hear the music of the elements
- **6 minutes**

http://www.ted.com/talks/joann_kuchera_morin_tours_the_allosphere.html



Today's Topic: Data Visualization

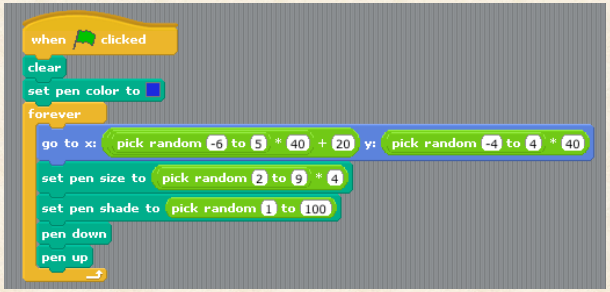
TED talk

Hans Rosling: "Let my dataset change your mindset"

- Visualizing time-series data sets can give new insights
- Data-bubble software bursts myths about the developing world (health, wealth)
- 20 minutes

http://www.ted.com/talks/hans_rosling_at_state.html#

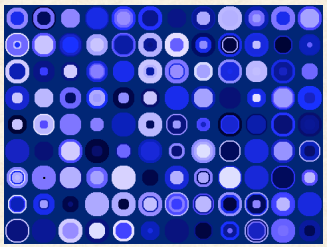
Steps towards Visualization in Scratch



Forever

- Goto random location on grid
- Stamp random shade of blue
- Random size within space

What is result of running Scripts?

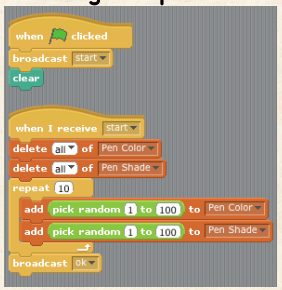


Forever

- Goto random location on grid
- Stamp random shade of blue
- Random size within space

2: What will these scripts do?

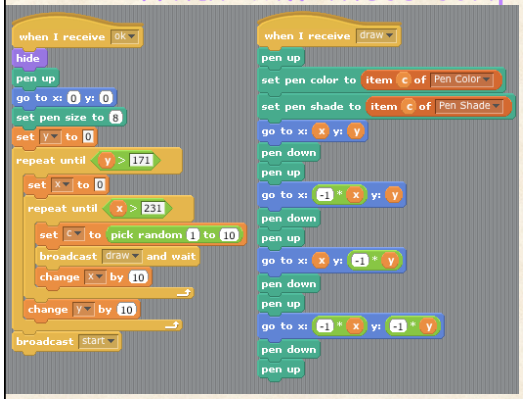
Stage scripts



Initializes two lists:
Pen Color and Pen Shade

How long is each List?

2: What will these scripts do?



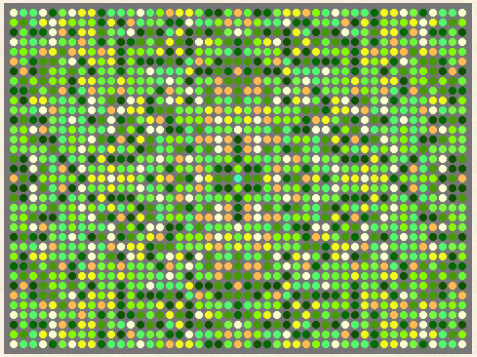
How are x, y varied?

How many pen points for each x,y?

What is relationship of two Lists?

What is purpose of c?

Result of Running Scripts



Symmetric picture along both x and y axis (4 quarters)
Ten different color/shade combinations

3: What will these scripts do?

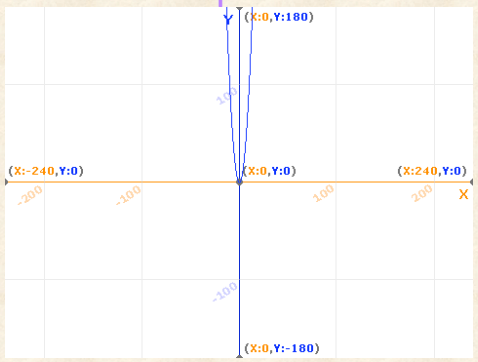
What if don't set Y in repeat loop?

How to make function draw faster?

What if change from abs to mod?

What change from abs to x*x?

Problem with plot of Y = X*X?

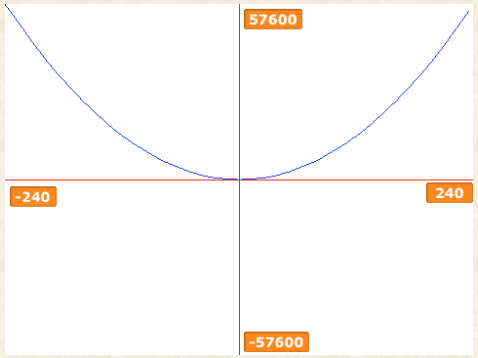


Value of Y goes above Stage coordinates for most values of X!
Possible way to fix?

Problem with plot of Y = X*X?

Interested in Z = X * X; Scale the computed value of Z so fits in Y coordinates
Calculate Z = X*X; compute Y = Z / MAX Z * MAX Y

How to draw scaled y = x*x?



How to scale plot of y=x*x?

Today's Summary

Today's topic

- Visualizing data can help everyone better understand the world we live in

"Reading"

- TED talks linked on Course Schedule page
- Please watch!

Announcements

- Project 1 due Wed before 9:55
- Demo in CS building
- Exam 1 graded, returned; solutions on webpage